

APPENDIX 10B

HEALTH RISK ASSESSMENT METHODOLOGY

APPENDIX 10B

Health Risk Assessment Methodology

A health-risk assessment was prepared to estimate diesel exhaust risk at two residential areas adjacent to Richmond Parkway where additional diesel truck traffic from the project and cumulative traffic increases would pass near existing homes. These locations were the northeast corner of the intersection of Richmond Parkway and Gertrude Avenue and along the west side of Richmond Parkway both south and north of its intersection with Hilltop Drive. These locations represent the worst-case exposure to new diesel particulate from project and cumulative traffic increases.

The health risk assessment utilized estimated new daily heavy-duty diesel truck trip volumes in 2015. The EMFAC-2002 emissions model was used to predict emission rates from traveling heavy-duty diesel trucks in the year 20015. Two separate models were constructed.

The model used in this assessment was the U.S. EPA-approved guideline model, Industrial Source Complex for Short-Term Impacts (ISCST-3).¹ At the Richmond Parkway/Gertrude Avenue intersection a single receptor was utilized, located at the closest corner of what is the closest residential building. Near Hilltop Drive a series of eight receptors were located along the western edge of the Richmond Parkway right-of-way. The location of receptors is shown in Figures 1 and 2. The ISCST-3 model was run using a meteorological file from a monitoring site at the Chevron refinery that was provided by the Bay Area Air Quality Management District. Model output is attached.

The maximum annual concentration obtained from each model was used in the calculation of cancer risk. The methodology for the analysis followed the guidelines developed for the preparation of health risk assessments required under the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (Health and Safety Code Section 44360 et seq.) and guidance provided by the Bay Area Air Quality Management District.

The Unit Risk Value for diesel exhaust particulate recommended by the California Office of Environmental Health Hazard Assessment (OEHHA) is 3.0×10^{-04} per microgram per cubic meter ($\mu\text{g}/\text{m}^3$). This means that for receptors with an annual average concentration of $1 \mu\text{g}/\text{m}^3$ in the ambient air, the probability of contracting cancer over a 70-year life span is 300 in one million (300×10^{-06}). The Unit Risk Value assumes that a person is exposed continuously for 70 years. Tables 1 and 2 below show the results of the risk screening calculation.

Calculated risk is below the BAAQMD significance threshold of 10 in one million. The Annual Average Concentration is also well below the chronic inhalation Reference

¹U. S. Environmental Protection Agency, User's Guide for the Industrial Source Complex (ISC3) Dispersion Models, Report EPA-454/b-95-003a, September 1995.

Exposure Level (REL) for diesel exhaust particulate of 5 ug/m³. The REL is the concentration at or below which no adverse non-cancer health effects are anticipated. These results support a conclusion that impacts related to diesel exhausts would be less than significant.

Table 1: Calculated Excess Carcinogenic Risk from Proposed Project Truck Traffic

Location	Annual Average Concentration (ug/m³)	Unit Risk Factor	Calculated Risk
Richmond Parkway/ Gertrude Avenue	0.00418	3.0×10^{-4}	1.25×10^{-6}
Richmond Parkway/ Hilltop Drive	0.00541	3.0×10^{-4}	1.62×10^{-6}

Table 2: Calculated Excess Carcinogenic Risk from Cumulative Truck Traffic

Location	Annual Average Concentration (ug/m³)	Unit Risk Factor	Calculated Risk
Richmond Parkway/ Gertrude Avenue	0.0141	3.0×10^{-4}	4.23×10^{-6}
Richmond Parkway/ Hilltop Drive	0.0167	3.0×10^{-4}	5.02×10^{-6}

CO STARTING
CO TITLEONE WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND PARKWAY/GERTRUDE
CO MODELOPT CONC URBAN DFAULT

CO AVERTIME PERIOD

CO POLLUTID OTHER
CO FLAGPOLE 1.5
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO LOCATION NB1 AREA 65.2 -228.9
SO LOCATION NB2 AREA 33.9 -155.3
SO LOCATION NB3 AREA 13.9 -78.4
SO LOCATION NB4 AREA 2 0
SO LOCATION NB5 AREA 2 80.0
SO LOCATION NB6 AREA 2 160.0
SO LOCATION SB1 AREA -10 160.0
SO LOCATION SB2 AREA -10 80.0
SO LOCATION SB3 AREA -10 0
SO LOCATION SB4 AREA 3.9 -78.4
SO LOCATION SB5 AREA 23.9 -155.5
SO LOCATION SB6 AREA 55.2 -228.9

SO SRCPARAM NB1 0.00000000947 4.15 8.0 80.0 -23 1.39
SO SRCPARAM NB2 0.00000000947 4.15 8.0 80.0 -16 1.39
SO SRCPARAM NB3 0.00000000947 4.15 8.0 80.0 -10 1.39
SO SRCPARAM NB4 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM NB5 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM NB6 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM SB1 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM SB2 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM SB3 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM SB4 0.00000000947 4.15 8.0 80.0 -10 1.39
SO SRCPARAM SB5 0.00000000947 4.15 8.0 80.0 -16 1.39
SO SRCPARAM SB6 0.00000000947 4.15 8.0 80.0 -23 1.39

SO SRCGROUP ALL
SO FINISHED
RE STARTING

RE DISCCART 20 12 0

RE FINISHED

ME STARTING
ME INPUTFIL CHV02600.asc
ME ANEMHGHT 10 METERS

ME SURFDATA 2703 2002
ME UAIRDATA 2703 2002

ME FINISHED
OU STARTING

OU RECTABLE ALLAVE FIRST

OU FINISHED

```
*****  
*** SETUP Finishes Successfully ***  
*****
```

*** ISCST3 - VERSION 00101 *** *** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
PARKWAY/GERTRUDE *** 09/17/03

*** 11:22:52

**MODELOPTs:

PAGE 1

CONC URBAN FLAT FLGPOL DFAULT

*** MODEL SETUP OPTIONS SUMMARY ***

- - - - -

**Intermediate Terrain Processing is Selected

**Model Is Setup For Calculation of Average CONCentration Values.

-- SCAVENGING/DEPOSITION LOGIC --

**Model Uses NO DRY DEPLETION. DDPLETE = F

**Model Uses NO WET DEPLETION. WDPLETE = F

**NO WET SCAVENGING Data Provided.

**NO GAS DRY DEPOSITION Data Provided.

**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:

1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for URBAN/Non-SO2

**Model Assumes Receptors on FLAT Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates PERIOD Averages Only

**This Run Includes: 12 Source(s); 1 Source Group(s); and 1 Receptor(s)

**The Model Assumes A Pollutant Type of: OTHER

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:

Model Outputs Tables of PERIOD Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
 m for Missing Hours
 b for Both Calm and

Missing Hours

**Misc. Inputs: Anem. Hgt. (m) = 10.00 ; Decay Coef. = 0.000 ; Rot. Angle
= 0.0

 Emission Units = GRAMS/SEC ; Emission
Rate Unit Factor = 0.10000E+07
 Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 1.2 MB of RAM.

**Input Runstream File: richmnd1.txt

**Output Print File: richmnd1.out

*** ISCST3 - VERSION 00101 ***
 PARKWAY/GERTRUDE ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
 09/17/03

*** 11:22:52

**MODELOPTs:

PAGE 2

CONC

URBAN FLAT FLGPOL DFAULT

*** AREA SOURCE DATA ***

ORIENT. SOURCE OF AREA ID (DEG.)	INIT. PART. SZ (METERS)	EMISSION RATE (GRAMS/SEC SCALAR VARY /METER**2) BY	COORD (SW CORNER) X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	X-DIM OF AREA (METERS)	Y-DIM OF AREA (METERS)
NB1	0	0.94700E-08	65.2	-228.9	0.0	4.15	8.00	80.00
-23.00	1.39							
NB2	0	0.94700E-08	33.9	-155.3	0.0	4.15	8.00	80.00
-16.00	1.39							
NB3	0	0.94700E-08	13.9	-78.4	0.0	4.15	8.00	80.00
-10.00	1.39							
NB4	0	0.94700E-08	2.0	0.0	0.0	4.15	8.00	80.00
0.00	1.39							
NB5	0	0.94700E-08	2.0	80.0	0.0	4.15	8.00	80.00
0.00	1.39							
NB6	0	0.94700E-08	2.0	160.0	0.0	4.15	8.00	80.00
0.00	1.39							
SB1	0	0.94700E-08	-10.0	160.0	0.0	4.15	8.00	80.00
0.00	1.39							
SB2	0	0.94700E-08	-10.0	80.0	0.0	4.15	8.00	80.00
0.00	1.39							
SB3	0	0.94700E-08	-10.0	0.0	0.0	4.15	8.00	80.00
0.00	1.39							
SB4	0	0.94700E-08	3.9	-78.4	0.0	4.15	8.00	80.00
-10.00	1.39							
SB5	0	0.94700E-08	23.9	-155.5	0.0	4.15	8.00	80.00
-16.00	1.39							
SB6	0	0.94700E-08	55.2	-228.9	0.0	4.15	8.00	80.00
-23.00	1.39							

*** ISCST3 - VERSION 00101 ***
PARKWAY/GERTRUDE ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

*** 11:22:52

**MODELOPTs:

PAGE 3

CONC URBAN FLAT FLGPOL DEFAULT

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID

SOURCE IDs

ALL	NB1	, NB2	, NB3	, NB4	, NB5	, NB6	, SB1	, SB2	,
SB3	, SB4	, SB5	, SB6	,					

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

URBAN FLAT FLGPOL DEFAULT

```
( 20.0, 12.0, 0.0, 0.0);
```

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

URBAN FLAT FLGPOL DFAULT

[illegible]

CATEGORIES ***

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

		WIND SPEED CATEGORY			
STABILITY CATEGORY		1	2	3	4
5	6				
	A	.15000E+00	.15000E+00	.15000E+00	.15000E+00
.15000E+00	.15000E+00				
	B	.15000E+00	.15000E+00	.15000E+00	.15000E+00
.15000E+00	.15000E+00				
	C	.20000E+00	.20000E+00	.20000E+00	.20000E+00
.20000E+00	.20000E+00				
	D	.25000E+00	.25000E+00	.25000E+00	.25000E+00
.25000E+00	.25000E+00				
	E	.30000E+00	.30000E+00	.30000E+00	.30000E+00
.30000E+00	.30000E+00				
	F	.30000E+00	.30000E+00	.30000E+00	.30000E+00
.30000E+00	.30000E+00				

STABILITY		WIND SPEED CATEGORY	
CATEGORY	1	2	3
5	6		4

.00000E+00	A	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00				
	B	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00				
	C	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00				
	D	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00				
.20000E-01	E	.20000E-01	.20000E-01	.20000E-01	.20000E-01
.20000E-01	.20000E-01				
	F	.35000E-01	.35000E-01	.35000E-01	.35000E-01
.35000E-01	.35000E-01				

*** ISCST3 - VERSION 00101 ***
PARKWAY/GERTRUDE ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

*** 11:22:52

**MODELOPTs:

PAGE 6

CONC

URBAN FLAT FLGPOL DFAULT

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: CHV02600.asc

FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)

SURFACE STATION NO.: 2703

UPPER AIR STATION NO.: 2703

NAME: UNKNOWN

NAME: UNKNOWN

YEAR: 2002

YEAR: 2002

				FLOW	SPEED	TEMP	STAB	MIXING HEIGHT (M)		USTAR	M-O LENGTH	Z-0	IPCODE	
PRATE	YR	MN	DY	HR	VECTOR	(M/S)	(K)	CLASS	RURAL	URBAN	(M/S)	(M)	(M)	
(mm/HR)														
10 01 01 01	262.6	2.77	285.8	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 02	246.9	1.97	285.9	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 03	246.5	3.40	285.9	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 04	242.7	2.91	285.9	5	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 05	246.5	3.22	285.8	5	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 06	249.4	2.68	285.5	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 07	212.4	1.21	285.3	5	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 08	241.0	1.39	285.1	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 09	239.7	1.52	285.3	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 10	277.0	1.03	285.8	3	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 11	318.0	2.28	286.3	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 12	355.7	1.97	286.5	3	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 13	8.2	1.74	286.5	3	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 14	339.6	2.46	286.1	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 15	323.7	2.15	286.5	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 16	331.5	3.17	287.5	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 17	331.4	4.29	288.0	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 18	333.7	5.77	288.3	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 19	335.9	5.10	288.0	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 20	339.7	4.69	288.1	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 21	347.3	4.07	287.8	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														
10 01 01 22	344.4	5.41	288.1	4	600.0	600.0	0.0000	0.0	0.0000	0				
0.00														

Exposure Level (REL) for diesel exhaust particulate of 5 ug/m³. The REL is the concentration at or below which no adverse non-cancer health effects are anticipated. These results support a conclusion that impacts related to diesel exhausts would be less than significant.

Table 1: Calculated Excess Carcinogenic Risk from Proposed Project Truck Traffic

Location	Annual Average Concentration (ug/m³)	Unit Risk Factor	Calculated Risk
Richmond Parkway/ Gertrude Avenue	0.00418	3.0×10^{-4}	1.25×10^{-6}
Richmond Parkway/ Hilltop Drive	0.00541	3.0×10^{-4}	1.62×10^{-6}

Table 2: Calculated Excess Carcinogenic Risk from Cumulative Truck Traffic

Location	Annual Average Concentration (ug/m³)	Unit Risk Factor	Calculated Risk
Richmond Parkway/ Gertrude Avenue	0.0141	3.0×10^{-4}	4.23×10^{-6}
Richmond Parkway/ Hilltop Drive	0.0167	3.0×10^{-4}	5.02×10^{-6}

CO STARTING
CO TITLEONE WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND PARKWAY/GERTRUDE
CO MODELOPT CONC URBAN DFAULT

CO AVERTIME PERIOD

CO POLLUTID OTHER
CO FLAGPOLE 1.5
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO LOCATION NB1 AREA 65.2 -228.9
SO LOCATION NB2 AREA 33.9 -155.3
SO LOCATION NB3 AREA 13.9 -78.4
SO LOCATION NB4 AREA 2 0
SO LOCATION NB5 AREA 2 80.0
SO LOCATION NB6 AREA 2 160.0
SO LOCATION SB1 AREA -10 160.0
SO LOCATION SB2 AREA -10 80.0
SO LOCATION SB3 AREA -10 0
SO LOCATION SB4 AREA 3.9 -78.4
SO LOCATION SB5 AREA 23.9 -155.5
SO LOCATION SB6 AREA 55.2 -228.9

SO SRCPARAM NB1 0.00000000947 4.15 8.0 80.0 -23 1.39
SO SRCPARAM NB2 0.00000000947 4.15 8.0 80.0 -16 1.39
SO SRCPARAM NB3 0.00000000947 4.15 8.0 80.0 -10 1.39
SO SRCPARAM NB4 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM NB5 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM NB6 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM SB1 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM SB2 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM SB3 0.00000000947 4.15 8.0 80.0 0 1.39
SO SRCPARAM SB4 0.00000000947 4.15 8.0 80.0 -10 1.39
SO SRCPARAM SB5 0.00000000947 4.15 8.0 80.0 -16 1.39
SO SRCPARAM SB6 0.00000000947 4.15 8.0 80.0 -23 1.39

SO SRCGROUP ALL
SO FINISHED
RE STARTING

RE DISCCART 20 12 0

RE FINISHED

ME STARTING
ME INPUTFIL CHV02600.asc
ME ANEMHGHT 10 METERS

ME SURFDATA 2703 2002
ME UAIRDATA 2703 2002

ME FINISHED
OU STARTING

OU RECTABLE ALLAVE FIRST

OU FINISHED

*** SETUP Finishes Successfully ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

CONC

URBAN FLAT FLGPOL DEFAULT

*** MODEL SETUP OPTIONS SUMMARY ***

```
**Output Print File: richmnd1.out
```

*** ISCST3 - VERSION 00101 ***
PARKWAY/GERTRUDE ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

*** 11:22:52

**MODELOPTs:

PAGE 2

CONC

URBAN FLAT FLGPOL DFAULT

*** AREA SOURCE DATA ***

ORIENT. SOURCE OF AREA ID (DEG.)	NUMBER INIT. SZ (METERS)	EMISSION RATE PART. (GRAMS/SEC SCALAR VARY CATS. /METER**2) BY	COORD (SW CORNER) X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	X-DIM OF AREA (METERS)	Y-DIM OF AREA (METERS)
NB1	0	0.94700E-08	65.2	-228.9	0.0	4.15	8.00	80.00
-23.00	1.39							
NB2	0	0.94700E-08	33.9	-155.3	0.0	4.15	8.00	80.00
-16.00	1.39							
NB3	0	0.94700E-08	13.9	-78.4	0.0	4.15	8.00	80.00
-10.00	1.39							
NB4	0	0.94700E-08	2.0	0.0	0.0	4.15	8.00	80.00
0.00	1.39							
NB5	0	0.94700E-08	2.0	80.0	0.0	4.15	8.00	80.00
0.00	1.39							
NB6	0	0.94700E-08	2.0	160.0	0.0	4.15	8.00	80.00
0.00	1.39							
SB1	0	0.94700E-08	-10.0	160.0	0.0	4.15	8.00	80.00
0.00	1.39							
SB2	0	0.94700E-08	-10.0	80.0	0.0	4.15	8.00	80.00
0.00	1.39							
SB3	0	0.94700E-08	-10.0	0.0	0.0	4.15	8.00	80.00
0.00	1.39							
SB4	0	0.94700E-08	3.9	-78.4	0.0	4.15	8.00	80.00
-10.00	1.39							
SB5	0	0.94700E-08	23.9	-155.5	0.0	4.15	8.00	80.00
-16.00	1.39							
SB6	0	0.94700E-08	55.2	-228.9	0.0	4.15	8.00	80.00
-23.00	1.39							

*** ISCST3 - VERSION 00101 *** *** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
PARKWAY/GERTRUDE *** 09/17/03

*** 11:22:52

**MODELOPTs:

PAGE 3

CONC

URBAN FLAT FLGPOL DFAULT

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID

SOURCE IDs

ALL NB1 , NB2 , NB3 , NB4 , NB5 , NB6 , SB1 , SB2 ,
SB3 , SB4 , SB5 , SB6 ,

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

CONC

```

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

```

```
(    20.0,    12.0,    0.0,    0.0);
```

[illegible]

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

CONC

URBAN FLAT FLGPOL DEFAULT

(1=YES; 0=NO)

[illegible]

CATEGORIES ***

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY		WIND SPEED CATEGORY			
		1	2	3	4
5	6				
	A	.15000E+00	.15000E+00	.15000E+00	.15000E+00
.15000E+00	.15000E+00				
	B	.15000E+00	.15000E+00	.15000E+00	.15000E+00
.15000E+00	.15000E+00				
	C	.20000E+00	.20000E+00	.20000E+00	.20000E+00
.20000E+00	.20000E+00				
	D	.25000E+00	.25000E+00	.25000E+00	.25000E+00
.25000E+00	.25000E+00				
	E	.30000E+00	.30000E+00	.30000E+00	.30000E+00
.30000E+00	.30000E+00				
	F	.30000E+00	.30000E+00	.30000E+00	.30000E+00
.30000E+00	.30000E+00				

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY		WIND SPEED CATEGORY	
1	2	3	4
5	6		

	A	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00				
	B	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00				
	C	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00				
	D	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00				
	E	.20000E-01	.20000E-01	.20000E-01	.20000E-01
.20000E-01	.20000E-01				
	F	.35000E-01	.35000E-01	.35000E-01	.35000E-01
.35000E-01	.35000E-01				

*** 11:22:52

```

**MODELOPTs:

```

PAGE 6

CONC

URBAN FLAT FLGPOL DEFAULT

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: CHV02600.asc

FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)

SURFACE STATION NO.: 2703

NAME: UNKNOWN

YEAR: 2002

UPPER AIR STATION NO.: 2703

NAME: UNKNOWN

YEAR: 2002

[illegible]

10	01	01	01	262.6	2.77	285.8	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	02	246.9	1.97	285.9	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	03	246.5	3.40	285.9	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	04	242.7	2.91	285.9	5	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	05	246.5	3.22	285.8	5	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	06	249.4	2.68	285.5	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	07	212.4	1.21	285.3	5	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	08	241.0	1.39	285.1	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	09	239.7	1.52	285.3	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	10	277.0	1.03	285.8	3	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	11	318.0	2.28	286.3	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	12	355.7	1.97	286.5	3	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	13	8.2	1.74	286.5	3	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	14	339.6	2.46	286.1	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	15	323.7	2.15	286.5	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	16	331.5	3.17	287.5	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	17	331.4	4.29	288.0	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	18	333.7	5.77	288.3	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	19	335.9	5.10	288.0	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	20	339.7	4.69	288.1	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	21	347.3	4.07	287.8	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	22	344.4	5.41	288.1	4	600.0	600.0	0.0000	0		

10	01	01	23	358.2	5.28	287.3	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	24	3.3	4.92	286.8	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
 FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

CONC

URBAN FLAT FLGPOL DEFAULT

INCLUDING SOURCE(S): NB1 , NB2 , NB3 ,
NB4 , NB5 , NB6 , SB1 ,
SB2 , SB3 , SB4 , SB5 , SB6 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3

* *

1941 1946 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030 2035 2040 2045 2050 2055 2060 2065 2070 2075 2080 2085 2090 2095 2100

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2
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20.00	12.00	0.00418
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[illegible]

*** ISCST3 - VERSION 00101 ***
PARKWAY/GERTRUDE ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

*** 11:22:52

**MODELOPTs:

PAGE 8

CONC

URBAN FLAT FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS)

RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3

**

NETWORK GROUP ID OF TYPE	GRID-ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)
ALL	1ST HIGHEST VALUE IS	0.00418 AT (	20.00, 12.00, 0.00,
0.00)	DC NA		
	2ND HIGHEST VALUE IS	0.00000 AT (	0.00, 0.00, 0.00,
0.00)			
	3RD HIGHEST VALUE IS	0.00000 AT (	0.00, 0.00, 0.00,
0.00)			
	4TH HIGHEST VALUE IS	0.00000 AT (	0.00, 0.00, 0.00,
0.00)			
	5TH HIGHEST VALUE IS	0.00000 AT (	0.00, 0.00, 0.00,
0.00)			
	6TH HIGHEST VALUE IS	0.00000 AT (	0.00, 0.00, 0.00,
0.00)			
	7TH HIGHEST VALUE IS	0.00000 AT (	0.00, 0.00, 0.00,
0.00)			
	8TH HIGHEST VALUE IS	0.00000 AT (	0.00, 0.00, 0.00,
0.00)			
	9TH HIGHEST VALUE IS	0.00000 AT (	0.00, 0.00, 0.00,
0.00)			
	10TH HIGHEST VALUE IS	0.00000 AT (	0.00, 0.00, 0.00,
0.00)			

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

*** ISCST3 - VERSION 00101 ***
PARKWAY/GERTRUDE ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

*** 11:22:52

**MODELOPTs:

PAGE 9

CONC

URBAN FLAT FLGPOL DFAULT

*** Message Summary : ISCST3 Model Execution ***

----- Summary of Total Messages -----

A Total of	0 Fatal Error Message(s)
A Total of	0 Warning Message(s)
A Total of	9 Informational Message(s)
A Total of	9 Calm Hours Identified

***** FATAL ERROR MESSAGES *****
*** NONE ***

***** WARNING MESSAGES *****
*** NONE ***

*** ISCST3 Finishes Successfully ***

CO STARTING
CO TITLEONE WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND PARKWAY/HILLTOP
CO MODELOPT CONC URBAN DFAULT

CO AVERTIME PERIOD

CO POLLUTID OTHER
CO FLAGPOLE 1.5
CO RUNORNOT RUN
CO FINISHED

SO STARTING
SO LOCATION NB1 AREA -97.3 -386.5
SO LOCATION NB2 AREA -76.6 -309.2
SO LOCATION NB3 AREA -55.9 -231.9
SO LOCATION NB4 AREA -35.2 -154.6
SO LOCATION NB5 AREA -14.5 -77.3
SO LOCATION NB6 AREA 6.2 0
SO LOCATION NB7 AREA 26.9 77.3
SO LOCATION NB8 AREA 47.6 154.6
SO LOCATION NB9 AREA 68.3 231.9
SO LOCATION NB10 AREA 89.0 309.2
SO LOCATION SB1 AREA 67.9 309.2
SO LOCATION SB2 AREA 47.2 231.9
SO LOCATION SB3 AREA 26.5 154.6
SO LOCATION SB4 AREA 5.8 77.3
SO LOCATION SB5 AREA -14.9 0
SO LOCATION SB6 AREA -35.6 -77.3
SO LOCATION SB7 AREA -56.3 -154.6
SO LOCATION SB8 AREA -77.0 -231.0
SO LOCATION SB9 AREA -99.7 -309.2
SO LOCATION SB10 AREA -120.4 -386.5

SO SRCPARAM NB1 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM NB2 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM NB3 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM NB4 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM NB5 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM NB6 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM NB7 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM NB8 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM NB9 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM NB10 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM SB1 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM SB2 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM SB3 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM SB4 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM SB5 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM SB6 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM SB7 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM SB8 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM SB9 0.00000000917 4.15 8.0 80.0 15 1.39
SO SRCPARAM SB10 0.00000000917 4.15 8.0 80.0 15 1.39

SO SRCGROUP ALL
SO FINISHED
RE STARTING

RE DISCCART -129.5 -152.4 0

RE DISCCART	-94.5	-94.5	0
RE DISCCART	-68.6	-48.8	0
RE DISCCART	-61.0	-15.2	0
RE DISCCART	-35.0	68.6	0
RE DISCCART	0	109.8	0
RE DISCCART	25.9	149.4	0
RE DISCCART	48.8	192.0	0

RE FINISHED

ME STARTING
ME INPUTFIL CHV02600.asc
ME ANEMHGHT 10 METERS

ME SURFDATA 2703 2002
ME UAIRDATA 2703 2002

ME FINISHED
OU STARTING
OU RECTABLE ALLAVE FIRST

OU FINISHED

*** SETUP Finishes Successfully ***

*** ISCST3 - VERSION 00101 ***
PARKWAY/HILLTOP ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

*** 11:15:24

**MODELOPTs:

PAGE 1

CONC URBAN FLAT FLGPOL DEFAULT

*** MODEL SETUP OPTIONS SUMMARY ***

**Intermediate Terrain Processing is Selected

**Model Is Setup For Calculation of Average CONCentration Values.

-- SCAVENGING/DEPOSITION LOGIC --

**Model Uses NO DRY DEPLETION. DDPLETE = F

**Model Uses NO WET DEPLETION. WDPLETE = F

**NO WET SCAVENGING Data Provided.

**NO GAS DRY DEPOSITION Data Provided.

**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:

1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for URBAN/Non-SO2

**Model Assumes Receptors on FLAT Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates PERIOD Averages Only

**This Run Includes: 20 Source(s); 1 Source Group(s); and 8 Receptor(s)

**The Model Assumes A Pollutant Type of: OTHER

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:

Model Outputs Tables of PERIOD Averages by Receptor

Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and

Missing Hours

**Misc. Inputs: Anem. Hgt. (m) = 10.00 ; Decay Coef. = 0.000 ; Rot. Angle
= 0.0

Emission Units = GRAMS/SEC ; Emission

Rate Unit Factor = 0.10000E+07

Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 1.2 MB of RAM.

**Input Runstream File: richmnd2.txt

**Output Print File: richmnd2.out

*** 11:15:24

* * * MODELOPTs:

PAGE 2

CONC

URBAN FLAT FLGPOL DEFAULT

*** AREA SOURCE DATA ***

ORIENT. SOURCE OF AREA			NUMBER INIT. EMISSION RATE	COORD (SW CORNER)		BASE	RELEASE	X-DIM	Y-DIM
PART. (GRAMS/SEC			EMISSION RATE	X	Y	ELEV.	HEIGHT	OF AREA	OF AREA
SZ SCALAR VARY			SCALAR VARY	(METERS)	(METERS)	(METERS)	(METERS)	(METERS)	(METERS)
ID	CATS.	/METER**2)	BY	(METERS)	(METERS)	(METERS)	(METERS)	(METERS)	(METERS)
(DEG.)	(METERS)								

NB1	0	0.91700E-08		-97.3	-386.5	0.0	4.15	8.00	80.00
15.00	1.39								
NB2	0	0.91700E-08		-76.6	-309.2	0.0	4.15	8.00	80.00
15.00	1.39								
NB3	0	0.91700E-08		-55.9	-231.9	0.0	4.15	8.00	80.00
15.00	1.39								
NB4	0	0.91700E-08		-35.2	-154.6	0.0	4.15	8.00	80.00
15.00	1.39								
NB5	0	0.91700E-08		-14.5	-77.3	0.0	4.15	8.00	80.00
15.00	1.39								
NB6	0	0.91700E-08		6.2	0.0	0.0	4.15	8.00	80.00
15.00	1.39								
NB7	0	0.91700E-08		26.9	77.3	0.0	4.15	8.00	80.00
15.00	1.39								
NB8	0	0.91700E-08		47.6	154.6	0.0	4.15	8.00	80.00
15.00	1.39								
NB9	0	0.91700E-08		68.3	231.9	0.0	4.15	8.00	80.00
15.00	1.39								
NB10	0	0.91700E-08		89.0	309.2	0.0	4.15	8.00	80.00
15.00	1.39								
SB1	0	0.91700E-08		67.9	309.2	0.0	4.15	8.00	80.00
15.00	1.39								
SB2	0	0.91700E-08		47.2	231.9	0.0	4.15	8.00	80.00
15.00	1.39								
SB3	0	0.91700E-08		26.5	154.6	0.0	4.15	8.00	80.00
15.00	1.39								
SB4	0	0.91700E-08		5.8	77.3	0.0	4.15	8.00	80.00
15.00	1.39								
SB5	0	0.91700E-08		-14.9	0.0	0.0	4.15	8.00	80.00
15.00	1.39								
SB6	0	0.91700E-08		-35.6	-77.3	0.0	4.15	8.00	80.00
15.00	1.39								
SB7	0	0.91700E-08		-56.3	-154.6	0.0	4.15	8.00	80.00
15.00	1.39								
SB8	0	0.91700E-08		-77.0	-231.0	0.0	4.15	8.00	80.00
15.00	1.39								
SB9	0	0.91700E-08		-99.7	-309.2	0.0	4.15	8.00	80.00
15.00	1.39								
SB10	0	0.91700E-08		-120.4	-386.5	0.0	4.15	8.00	80.00
15.00	1.39								

*** ISCST3 - VERSION 00101 ***
PARKWAY/HILLTOP ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

*** 11:15:24

**MODELOPTs:

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CONC

URBAN FLAT FLGPOL DFAULT

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID

SOURCE IDs

ALL	NB1	,	NB2	,	NB3	,	NB4	,	NB5	,	NB6	,	NB7	,	NB8	,
NB9	,	NB10	,	SB1	,	SB2	,									
	SB3	,	SB4	,	SB5	,	SB6	,	SB7	,	SB8	,	SB9	,	SB10	,

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

CONC

URBAN FLAT FLGPOL DEFAULT

```

(      -129.5,      -152.4,           0.0,           0.0);      (      -94.5,      -94.5,
0.0,           0.0);      □□□□□□□□□□□□□□□□□□□□
(      -68.6,      -48.8,           0.0,           0.0);      (      -61.0,      -15.2,
0.0,           0.0);
(      -35.0,        68.6,           0.0,           0.0);      (           0.0,      109.8,
0.0,           0.0);
(        25.9,      149.4,           0.0,           0.0);      (        48.8,      192.0,
0.0,           0.0);

```

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
09/17/03

URBAN FLAT FLGPOL DEFAULT

* * *

(1=YES; 0=NO)

[illegible]

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

5	STABILITY	WIND SPEED CATEGORY			
	CATEGORY	1	2	3	4
.15000E+00	A	.15000E+00	.15000E+00	.15000E+00	.15000E+00
	B	.15000E+00	.15000E+00	.15000E+00	.15000E+00
.20000E+00	C	.20000E+00	.20000E+00	.20000E+00	.20000E+00
.25000E+00	D	.25000E+00	.25000E+00	.25000E+00	.25000E+00
.30000E+00	E	.30000E+00	.30000E+00	.30000E+00	.30000E+00
.30000E+00	F	.30000E+00	.30000E+00	.30000E+00	.30000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY		WIND SPEED CATEGORY	
CATEGORY	1	2	3
5	6		4

.00000E+00	A	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	B	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	C	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	D	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.20000E-01	E	.20000E-01	.20000E-01	.20000E-01	.20000E-01
.35000E-01	F	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** ISCST3 - VERSION 00101 ***
PARKWAY/HILLTOP ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
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URBAN FLAT FLGPOL DFAULT

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: CHV02600.asc

FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)

SURFACE STATION NO.: 2703

UPPER AIR STATION NO.: 2703

NAME: UNKNOWN

NAME: UNKNOWN

YEAR: 2002

YEAR: 2002

				FLOW	SPEED	TEMP	STAB	MIXING HEIGHT (M)		USTAR	M-O LENGTH	Z-0	IPCODE	
PRATE	YR	MN	DY	HR	VECTOR	(M/S)	(K)	CLASS	RURAL	URBAN	(M/S)	(M)	(M)	
(mm/HR)														
0.00	10	01	01	01	262.6	2.77	285.8	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	02	246.9	1.97	285.9	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	03	246.5	3.40	285.9	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	04	242.7	2.91	285.9	5	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	05	246.5	3.22	285.8	5	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	06	249.4	2.68	285.5	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	07	212.4	1.21	285.3	5	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	08	241.0	1.39	285.1	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	09	239.7	1.52	285.3	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	10	277.0	1.03	285.8	3	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	11	318.0	2.28	286.3	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	12	355.7	1.97	286.5	3	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	13	8.2	1.74	286.5	3	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	14	339.6	2.46	286.1	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	15	323.7	2.15	286.5	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	16	331.5	3.17	287.5	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	17	331.4	4.29	288.0	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	18	333.7	5.77	288.3	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	19	335.9	5.10	288.0	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	20	339.7	4.69	288.1	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	21	347.3	4.07	287.8	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00	10	01	01	22	344.4	5.41	288.1	4	600.0	600.0	0.0000	0.0	0.0000	0

10	01	01	23	358.2	5.28	287.3	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													
10	01	01	24	3.3	4.92	286.8	4	600.0	600.0	0.0000	0.0	0.0000	0
0.00													

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

*** ISCST3 - VERSION 00101 ***
PARKWAY/HILLTOP ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
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URBAN FLAT FLGPOL DFAULT

FOR SOURCE GROUP: ALL *** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES

INCLUDING SOURCE(S): NB1 , NB2 , NB3 ,
NB4 , NB5 , NB6 , NB7 ,
NB8 , NB9 , NB10 , SB1 , SB2 , SB3 , SB4 , SB5 ,
SB6 , SB7 , SB8 , SB9 ,
SB10 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3

**

	X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD
(M)	CONC				
94.50	-129.50	-152.40	0.00192	-94.50	-
	0.00255		□□□□□□□□□□		
15.20	-68.60	-48.80	0.00311	-61.00	-
	0.00306				
	-35.00	68.60	0.00323	0.00	
109.80	0.00461				
	25.90	149.40	0.00541	48.80	
192.00	0.00517				

*** ISCST3 - VERSION 00101 ***
PARKWAY/HILLTOP ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
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URBAN FLAT FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS)

RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3

**

NETWORK

GROUP ID

OF TYPE GRID-ID

AVERAGE CONC

RECEPTOR (XR, YR, ZELEV, ZFLAG)

ALL	1ST HIGHEST VALUE IS	0.00541 AT (	25.90,	149.40,	0.00,
0.00)	DC NA				
	2ND HIGHEST VALUE IS	0.00517 AT (	48.80,	192.00,	0.00,
0.00)	DC NA				
	3RD HIGHEST VALUE IS	0.00461 AT (	0.00,	109.80,	0.00,
0.00)	DC NA				
	4TH HIGHEST VALUE IS	0.00323 AT (	-35.00,	68.60,	0.00,
0.00)	DC NA				
	5TH HIGHEST VALUE IS	0.00311 AT (	-68.60,	-48.80,	0.00,
0.00)	DC NA				
	6TH HIGHEST VALUE IS	0.00306 AT (	-61.00,	-15.20,	0.00,
0.00)	DC NA				
	7TH HIGHEST VALUE IS	0.00255 AT (	-94.50,	-94.50,	0.00,
0.00)	DC NA				
	8TH HIGHEST VALUE IS	0.00192 AT (	-129.50,	-152.40,	0.00,
0.00)	DC NA				
	9TH HIGHEST VALUE IS	0.00000 AT (	0.00,	0.00,	0.00,
0.00)					
	10TH HIGHEST VALUE IS	0.00000 AT (	0.00,	0.00,	0.00,
0.00)					

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

*** ISCST3 - VERSION 00101 ***
PARKWAY/HILLTOP ***

*** WCCSL/CUMULATIVE DIESEL PARTICULATE- RICHMOND
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URBAN FLAT FLGPOL DFAULT

*** Message Summary : ISCST3 Model Execution ***

----- Summary of Total Messages -----

A Total of	0 Fatal Error Message(s)
A Total of	0 Warning Message(s)
A Total of	9 Informational Message(s)
A Total of	9 Calm Hours Identified

***** FATAL ERROR MESSAGES *****
*** NONE ***

***** WARNING MESSAGES *****
*** NONE ***

*** ISCST3 Finishes Successfully ***
